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On the Relation between Agricultural Informationization and Rural Informationization

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Abstract Through analyzing concept of agriculture and countryside, and overall objective of new socialist countryside construction "developed production, well-off living, civilized village culture, clean village environment, and democratic management", this paper divides the informationization construction for new socialist countryside into agricultural informationization and rural informationization, and presents the new socialist countryside informationization construction system. Then the paper elaborates connotation of agricultural informationization and rural informationization, differentiates and analyzes the relation between the two concepts. Agricultural informationization and rural informationization influence each other, promote each other, and are integrated into new socialist countryside informationization construction.

Key words Sannong issue, New socialist countryside informationization, Agricultural informationization, Rural informationization

1 Introduction

Sannong issue refers to issues concerning agriculture, countryside and farmers. Since the Report on the Work of the Government raised Sannong issue, people from all walks of life make concerted efforts to solve this issue. Farmer is the core of Sannong issue, and ultimate objective of solution to agricultural and rural issues is to serve farmers. Therefore, effective strengthening agricultural and rural construction is the key to settling Sannong issue. Both *Report to the Sixteenth National Congress of the CPC* and *Report to the Seventeenth National Congress of the CPC* stated we should strengthen the position of agriculture as the foundation of the economy, take the road of agricultural modernization with Chinese characteristics, and establish the long-term mechanism of "Industry Promotes Agriculture, Urban Areas Elevate Rural Areas", to form the new pattern of integrated urban and rural area socio-economic development^[1-2]. In 2010, No. 1 document of central government still took settlement of Sannong issue as top priority of the government's work. It also stipulated that we should stabilize and improve basic rural policies of the Party, give prominence to agricultural and rural infrastructure, include improvement of people's livelihood into major tasks of adjusting distribution pattern of national income, take increasing rural demand as key measure of pulling domestic demand, take developing modern agriculture as important task of transforming economic development mode, and take construction of new socialist countryside and pushing forward urbanization as a lasting power^[3].

Information technology like computer has made considerable progress in all fields. Currently, the best approach to accelerating rural and agricultural development is outfitting agriculture and countryside with state-of-the-art information technology,

solving agricultural problem with agricultural information technology, and solving rural problem with rural information technology. *Report to the Sixteenth National Congress of the CPC*, *Report to the Seventeenth National Congress of the CPC* and No. 1 document of central government stated agriculture and countryside separately, in the hope of guiding us to distinguish the difference between agriculture and countryside, then determine different construction contents for agricultural informationization and rural informationization. In this sense, understanding concepts of agricultural informationization and rural informationization and their dialectical relationship is of great significance to helping agricultural and rural workers making clear work tasks and directions.

2 Agriculture and countryside

Before discussing agricultural informationization and rural informationization, we should understand concepts of agriculture and countryside, which is helpful for further understanding their connotation and relationship.

2.1 Agriculture In *Xinhua Zidian* (literally "New China Dictionary", which is a Chinese language dictionary published by the Commercial Press), agriculture is defined as the process of producing food, feed, fiber and many other desired products by the cultivation of certain plants and the raising of domesticated animals (livestock). Currently, with social progress, the implication of agriculture is constantly extending. In a narrow sense, the present agriculture refers to the industry of agricultural product production and sales. In a broad sense, the multi-form agriculture covers the entire agricultural system or can be described to be a cross-shaped agricultural system^[4]. As shown in Fig. 1, agriculture is the agricultural service industry of preproduction, production and postproduction. It includes production industry of animals and plants and microorganism in production process, as well as agricultural completion industry of postproduction (including processing and sales of agricultural products).

2.2 Countryside Countryside refers to rural areas where laborers mainly engaged in agricultural production are inhabit-

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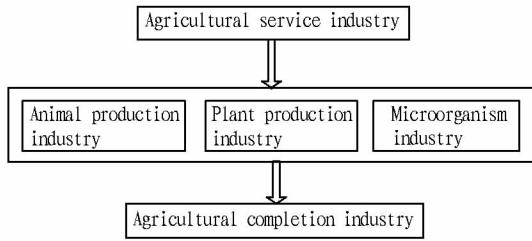


Fig.1 Schematic drawing for cross-shaped multi-form agriculture

ed. In China, countryside refers to areas covered by administrative villages.

At present, China is carrying out new socialist countryside construction. Apart from agricultural production, farmers' life is gradually valued, various township enterprises are growing. With conduction of activities for inviting outside investment, more enterprises march to rural areas, making agriculture, industry and service industry coexist in rural areas. In addition, with increasing of migrant workers, many young rural residents go outside, heavy burden of agricultural production is placed on shoulders of the elderly, the weak and women. As a result, rural areas are not concentrated by labors mainly engaged in agricultural production any more. In this situation, we should make clear definition of countryside from another aspect.

Countryside is a definition relative to city. To further understand the definition of countryside, we firstly look at definition of the city. Compared with countryside, city is a larger area with concentration of non-agricultural population engaged in non-agricultural activities. In China, an area with organizational system and population of more than 100 000 is generally called a city. In cities, population and productivity are concentrated, most cities are centers of industry, commerce, transportation and communication, culture and education, information, and administration of a region. Countryside is relative to city, thus we call all non – urban areas countryside, and determine countryside as areas where agricultural activities are conducted. In China, apart from areas covered by administrative villages, we incorporate towns into range of countryside.

From the above concept discussion, it can be seen that countryside is an area and agriculture is an industry within the rural area. However, countryside also includes economic, cultural and educational, and health industries, which should also be considered in the construction of new socialist countryside. Chinese rural problems are characterized by backward appearance and underdeveloped economy. Someone says that " Chinese cities are like Europe, while rural areas are like Africa". To solve this problem, the key is to strengthen agricultural construction, combined with advance in politics, economy, culture and education, and social services.

3 New socialist countryside informationization construction system

The Opinions of the Central Committee and State Council on Formulating the Outline of the Eleventh Five-year Plan is

sued at the Fifth Plenary Session of the Sixteenth Central Committee of the CPC clearly pushed forward the historic mission of building new socialist countryside. It summarizes the overall objective of new socialist countryside to be " developed production, well-off living, civilized village culture, clean village environment, and democratic management". The new socialist countryside construction is huge and complex in content, involves wide range, has long construction time, so it is extremely difficult to realize the objective. In the process of new countryside informationization construction promoting new countryside construction, clearly understanding construction content is of great significance. In 2006, No. 1 document of central government stated that " agricultural and rural works should be centered on the new socialist countryside construction"; " we need to consolidate, improve and strengthen the policy of supporting agriculture and giving favorable treatment to farmers, build modern agriculture, stabilize the development of grain production, actively adjust agricultural structure and strengthen infrastructure construction"; " coordinate the promotion in rural economic, political, cultural, social and Party construction". On the basis of statement of agriculture and countryside in No. 1 documents of central government and with reference to objectives of new socialist countryside construction, we recommend speeding up new socialist countryside construction through new countryside informationization construction. We divide tasks of new countryside informationization into agricultural informationization and rural informationization, as shown in Fig.2.

Agricultural informationization is the process of agricultural preproduction, production and postproduction informationization, mainly to solve problems of agricultural production development. Countryside informationization includes rural economic informationization, rural management informationization, rural cultural informationization, and rural social service informationization, corresponding to development of rural economic construction, political construction, cultural construction, and social construction. In line with complex content of current countryside informationization construction, we put forward " one talent and three-affair promotion model". Specifically, it is firstly to promote rural informationization through " new rural informationization talent cultivation, rural E-government affairs, rural E – commerce and rural comprehensive information service". After this model produces desired effect, it is proposed to carry out construction of other aspects of countryside construction. Through mutual influence and cross promotion of construction contents of agricultural informationization and rural informationization, it is expected to achieve the objectives of new socialist countryside construction " developed production, well-off living, civilized village culture, clean village environment, and democratic management".

3.1 Agricultural informationization Agricultural informationization is the historical process of cultivating and developing new productivity with computer-based intelligent tools as representative to make it applicable for agriculture^[5]. Agricultural informationization is the informationization of whole agricultural process. It is to comprehensively develop and apply modern in-

formation technology in agricultural fields, such as technologies applied in precision agriculture (precision farming)^[6-7], to make the technologies infiltrated in preproduction, production and postproduction, and sales, consumption and market sec-

tions, so as to accelerate transformation of traditional agricultural, greatly improve agricultural production efficiency and agricultural productivity, and promote constant, stable and high-efficient development of agriculture^[8].

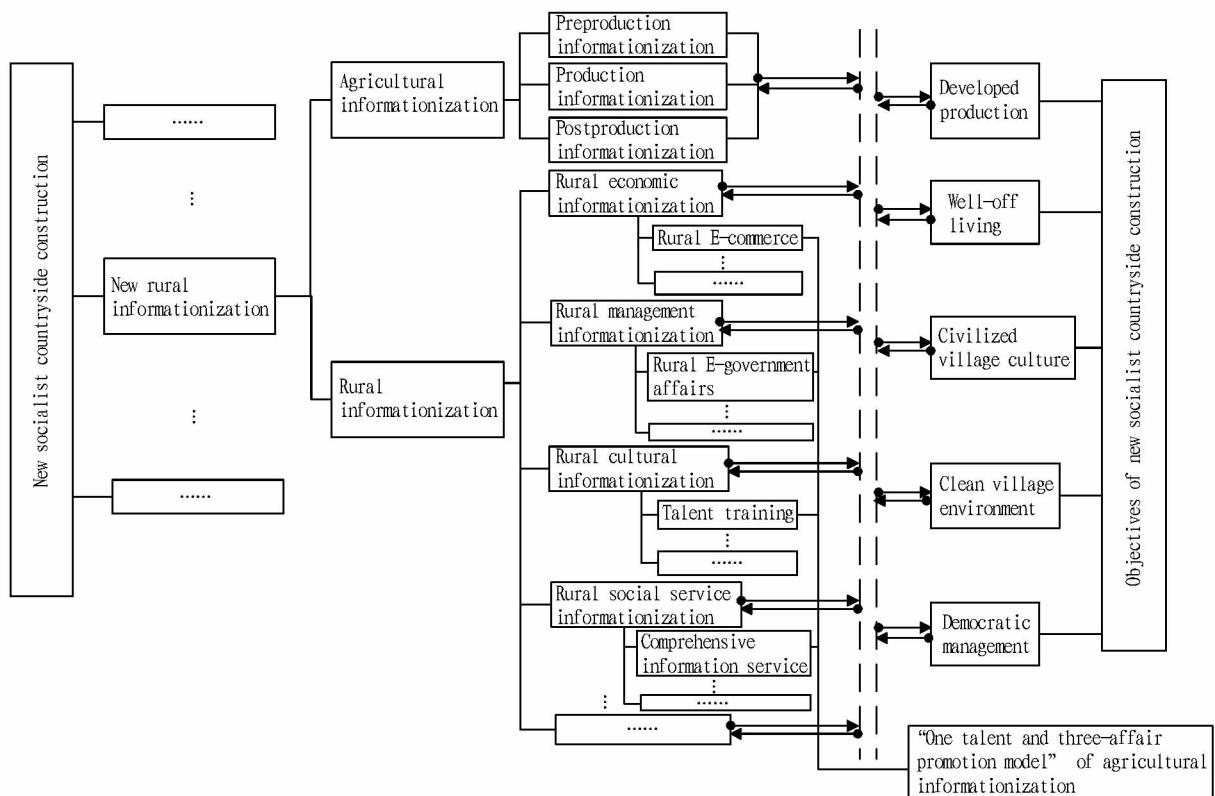


Fig.2 New socialist countryside informationization construction system

According to division of agricultural process, agricultural informationization can be divided into preproduction, production and postproduction informationization. When the added value of information industry of a country takes up 50% or more of the gross agricultural product (GAP), it is deemed that its agriculture has realized informationization.

3.2 Rural informationization Rural informationization is a dynamic concept. It is the process of building rural comprehensive information system with information technology such as computer and communication to make the countryside develop and take full advantage of information resources, speed up rural economic, political, cultural development and social progress, and gradually improve and achieve rural modernization. As to construction contents, rural informationization needs completion of construction of rural economic informationization, rural management informationization, rural cultural informationization, and rural social service informationization.

3.2.1 Rural economic informationization. The objective of "well-off living" is to speed up construction of rural economic informationization and rapidly develop rural economy. Here, it is particularly energetically develop rural E-commerce platform. Through establishing rural E-commerce platform, it is convenient to carry out various online commercial activities, transaction activities, online collection of taxes and fees, break

the time and space limitation, increase efficiency and reduce cost, and greatly improve rural economic management level.

3.2.2 Rural management informationization. The objective of "democratic management" is to realize democracy and transparency of rural management. Rural E-government affairs, as major construction content of rural management informationization, not only can increase management efficiency, but also can satisfy requirement of "democratic management". Besides, rural E-government affair system can bring into full play leading role of government, issue public information including policies and regulations, meteorological service, disaster prevention, and making public village affairs. With the aid of modern information technology, it is expected to break the limitation of natural environment, like remoteness and scatter of countryside, to make rural management more rapid and transparent. In addition, it can collect and collate basic information of rural finance, land, water resources and labor forces, establish and improve rural information database, and accelerate development and application of agriculture-related information resources, to promote high-efficient rural management.

3.2.3 Rural cultural informationization. The objective of "civilized village culture" involves works of rural cultural construction and education development.

It is to promote cultural development in rural areas through

informationization construction, enhance farmers' ability of selecting information through project of Internet, rural radio and television approaching to every village, enrich farmers' cultural life, make effort to reduce urban and rural information gap, and strengthen rural spiritual civilization construction, to promote overall progress of rural society.

Education is a part of cultural construction. Through rural education informationization construction, it can greatly strengthen educational and cultural level and rural talent training, to pool talents for further development of countryside. Here, the education is also divided into school-age children education and adult education. For the school-age children education, education department is launching the " school-to-school" project oriented toward informationization construction in rural primary and middle schools, in order to make rural areas share quality education resources such as advanced teaching methods and experimental conditions with the aid of computer-aided teaching, multi-media education, modern distance education and virtual reality education, to promote development of rural education cause^[9]. For the adult education, rural areas should strengthen planting and cultivation technical training, migrant worker training, improve rural people's quality, and narrow the urban and rural gap.

3.2.4 Rural social service informationization. The objective of " clean village environment" is not merely the problem of village appearance, but also involves better living of farmers and higher social management service level. Currently, rural areas are relatively backward in China. Providing comprehensive rural information services through rural social service informationization construction can effectively solve problems closely linked with rural medical care and health and employment, solve rural social problems, and rapidly improve farmers' living conditions.

As regards medical care and health, we should strive to establish perfect rural drinking water monitoring system, rural epidemic monitoring, prevention and control and health information reporting system, drug and food quarantine and inspection information system, and village community medical care and health resource information management system, effectively grasp and manage medical care and health resource information, farmers' health information, disease prediction and prevention information, medical institution information and medical worker information, and take full advantage of the above information, to raise overall level of rural medical care and health service, and solve long-standing difficulty of farmers in seeking medical advice and medicines.

For the employment, we should build rural labor employment and social security service system, to provide migrant workers with job opportunity and information. Current rural elementary education can not support development of vocational education easily. At the same time of researching the establishment of information service for migrant workers, it is also urgent to study development of information communication terminal. Since basic education of migrant workers is different, it is required to study many models of access platform to provide services for information transmission^[10].

4 Dialectical relationship between agricultural informationization and rural informationization

4.1 Agricultural informationization and rural informationization influencing each other and promoting each other

Although different in connotation, agricultural informationization and rural informationization influence each other and promote each other. Construction of single one will be difficult, but overall consideration of both will achieve twice the results for half the effort.

Firstly, early stage of rural informationization construction is mainly serving agricultural informationization. At present, rural areas in China are backward in development and weak in infrastructure. To change this situation, we should raise economic level of rural areas and satisfy their political and cultural demands. Since major industry of countryside is agriculture, farmers' economic income comes mainly from sales of agricultural products, and increase in agriculture is a major source for increasing farmers' income, " flourishing rural economy" and " perfecting rural market" should start from agricultural economic, agricultural market and agricultural service system, which is the paramount task and requirement of current rural development. At early stage of rural informationization construction, the construction should be concentrated on promoting agricultural development. For rural economic informationization, we can develop rural E – commerce to provide better approach for sales of agricultural products, to avoid " cheap grain harms farmers" and solve problem of agricultural product sales; developing rural management informationization can reinforce rural cohesiveness, guarantee rural stability, and promote stable development of agricultural production; developing rural cultural informationization, popularizing agricultural planting and raising knowledge, and providing training for agricultural technical personnel can provide a good many high quality talents for agricultural informationization construction; providing comprehensive agricultural information service through social management informationization can benefit farmers, improve their living condition and summon up their enthusiasm for working.

Secondly, agricultural informationization needs promotion of rural informationization. Apart from policy and financial support of the state, the development of agricultural informationization requires farmers' efforts from bottom to top. Among this, it involves change of farmers' traditional ideas, making farmers realize benefit of informationization, and actively meeting arrival of informationization, vigorously devoting themselves to agricultural and rural informationization construction. In the change of ideas, it is essential to firstly change ideas of township leaders and large planting households through rural management informationization construction, so as to bring into play the demonstration role and promote work in the entire area using the experience of pilot regions. Rural economic informationization construction is to bring benefits and actual effect to farmers and improve their enthusiasm. Once ideas changed, farmers will spontaneously welcome the agricultural informationization, which will rapidly promote agricultural informationization. In ad-

dition, early stage of rural informationization needs construction of a series of projects, including Tri-networks integration, and rural radio and television approaching to every village. These will lay a solid material foundation for development of agricultural informationization. Rural informationization construction cultivates a lot of new farmers that have rich knowledge, farming technique and are good at management, and provides a good many reliable labor forces for agricultural informationization construction. Naturally, other aspects of rural informationization also bring benefits to farmers, and this promotes development of agricultural informationization directly or indirectly. What's more, rural informationization provides talent reserve, material reserve and economic reserve for agricultural informationization construction, and plays a great role in promoting rapid development of agricultural informationization.

Thirdly, agricultural informationization plays a decisive role in development of rural informationization. Agriculture is major industry of countryside. Without increase in farmers' income and improvement of their well-off living, other works of countryside will not be carried out smoothly and effectively. Current rural informationization construction is intended to promote agricultural development through economic, political, cultural and social construction, and then further promote these aspects through agricultural development. The construction of both informationization aspects is a mutual promotion process. After all, the foundation of countryside is agriculture. Without agricultural development, it is impossible to provide adequate food and clothing, let alone economic, political, cultural and social construction. Nowadays, with increasingly declining of per capita area of cultivated farmland in China, in addition to frequent occurrence of natural disasters, we have to carry out agricultural informationization to ensure increase in yield of agricultural products and farmers' income. This is also the reason for first economic construction and then political, cultural and social construction. However, effective implementation of economic construction also needs guarantee of agricultural harvest brought by agricultural informationization. The development of agricultural informationization brings increase in yield of agricultural products and will impose higher requirement for rural economic and management informationization. At the same time of increasing farmers' income, it will naturally promote the progress of cultural and social service informationization.

4.2 Agricultural informationization and rural informationization integrated into new socialist countryside informationization construction The overall objective of new socialist countryside construction is "developed production, well-off living, civilized village culture, clean village environment, and democratic management". New socialist countryside construction pushes forward the realization of this objective through mutual influence and promotion of agricultural informationization and rural informationization. As stated above, "developed production" will be realized mainly through agricultural informationization, but economic informationization in rural informationization provides basis for production decision; cultural informationization supplies talents for agricultural production; management

and social service informationization can ravel out worry about agricultural production; all these will promote production development. Similarly, "well-off living" will be achieved mainly through rural economic informationization, but other contents of agricultural informationization and rural informationization also play a great role in realization of this objective. In the course of realization of "developed production, well-off living, civilized village culture, clean village environment, and democratic management", agricultural and rural informationization construction has major contents to correspond to it, while other contents also exert certain influence on realization of this objective. Also, the realization of objective of new socialist countryside construction reacts on construction process of agricultural and rural informationization and promotes development of agricultural and rural informationization. Therefore, agricultural informationization and rural informationization influence each other, promote each other, and are integrated into new socialist countryside informationization construction, specifically integrated into realization of overall objective of new socialist countryside construction.

5 Conclusions

Currently, China is vigorously strengthening new socialist countryside construction. The new socialist countryside construction has complex content and involves rural agricultural production, economy, politics, culture and society. Promoting development of new socialist countryside construction with new rural informationization construction and outfitting agriculture and countryside with the state-of-the-art productivity can effectively accelerate new socialist countryside construction. With reference to the overall objective of new socialist countryside construction "developed production, well-off living, civilized village culture, clean village environment, and democratic management", we divide new socialist countryside informationization into agricultural informationization and rural informationization, and get the new socialist countryside informationization system. Agricultural informationization can be divided into pre-production, production and postproduction informationization, while rural informationization includes rural economic, rural management, rural cultural, and rural social service informationization. Agricultural informationization and rural informationization influence each other, promote each other, and are integrated into new socialist countryside informationization construction. Clearly understanding new socialist countryside informationization construction system and coordinating the development of agricultural and rural informationization can speed up the realization of overall objective of new socialist countryside construction.

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